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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/039,973

Filing Date: October 25, 2001

Appellant(s): PALMER ET AL.

Brian F. Russell
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/23/2005 appealing from the Office action mailed 5/20/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

GROUNDS OF REJECTION NOT ON REVIEW

The following grounds of rejection have not been withdrawn by the examiner, but they are not under review on appeal because they have not been presented for review in the appellant's brief.

1. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead (US patent 6,683,993) as applied to Claims 4 and 12, and further in view of Frazier et al. (US patent 5,689,255.)
2. Claims 17-18, 20, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead (US patent 6,683,993) as applied to Claims 1-2, 4, 6-8, and further in view of Pearlman et al. (US patent 5,764,807.)
3. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mead and Mehrotra as applied to Claim 3, and further in view of Pearlman et al. (US patent 5,764,807.)
4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mead and Frazier as applied to Claim 5, and further in view of Pearlman et al. (US patent 5,764,807.)

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct except the following.

A substantially correct copy of appealed claim 9 appears on page 15 of the Appendix to the appellant's brief. The minor errors are as follows: The symbol ";" at the end of line 3 of Claim 9 shall be replaced with ",". The words "means for" in line 4 of Claim 9 shall be deleted.

(8) Evidence Relied Upon

6,683,993	MEAD	1-2004
6,571,016	MEHROTRA et al	5-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-2, 4, 6-10, 12, and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Mead (US patent 6,683,993 cited previously.)

For Claims 9, 12, 14, and 16, Mead teaches an apparatus for reducing datastream transmission bandwidth requirements, comprising (also seeing the Examiner's response above):

-- means for, in response to determining that an image data structure is present in a datastream, (column 2, line 66 to column 3, line 23; Audio and video data are inputted to segment element 16 of Fig. 1. Segment element 16 segments the data according its type. The segmenting process inherently has a determining mean.)

-- extracting said image data structure from said datastream; (column 2, line 66 to column 3, line 23; Audio and video data are inputted to segment element 16 of Fig. 1. Segment element 16 extracts the video data.)

-- means for dividing said image data structure into one or more subregions; (element 46 of Fig. 2; column 3, lines 42-55)

-- means for associating a corresponding identifier with a first selected one of said one or more subregions; (column 3, line 56 to column 4, line 15)

-- means, in response to determining that said first selected one of said one or more subregions is substantially identical to a second selected one of said one or more subregions, (column 3, line 56 to column 4, line 26; element 50 of Fig. 2)

-- means for replacing second selected one of said one or more subregions with said corresponding identifier of said first selected one of said one or more subregions; (column 3, line 56 to column 4, line 26; element 50 of Fig. 2; The symbolic code is the identifier.)

-- means for reducing transmission bandwidth requirements by generating a packaged image, which includes a decoding table comprising said first selected one or more subregions and said corresponding identifier of said first selected one of said one or more subregions in place of said second selected one of said one or more subregions; (column 3, line 56 to column 4, line 26; column 4, lines 47-67; A packaged image data of both unrecognized objects and

symbolic codes of recognized objects are formed in multiplexer 54 and variable length coder of Fig. 2. The data of unrecognized objects and their symbolic codes form a decoding table.)

-- inserting said packaged image into said data stream; (column 3, line 56 to column 4, line 26; column 4, lines 47-67; A packaged image data of both unrecognized objects and symbolic codes of recognized objects are formed in multiplexer 54 and variable length coder of Fig. 2.)

-- means for transmitting said modified data; (column 3, line 56 to column 4, line 26; column 4, lines 47-67; The data are transmitted as element 67 of Fig. 2.)

-- wherein the reducing transmission bandwidth requirements by generating comprises means for retaining a symbol dictionary of references and identifiers employed by the determining means in processing a previously analyzed image data structure; (object library 22 of Fig. 1)

-- wherein the reducing transmission bandwidth requirements by generating further comprises means for storing a preloaded set of references on a sending machine and omitting preloaded references from the decoding table; (column 3, line 56 to column 4, line 26; column 4, lines 47-67; The data are transmitted as element 67 of Fig. 2. The data of unrecognized objects and their symbolic codes form a decoding table. The recognized objects and their corresponding symbolic codes are preloaded in libraries 22 and 32 of Fig. 1.)

-- means for examining a datastream for the presence of one or more image data items; (column 2, line 66 to column 3, line 23; Audio and video data are inputted to segment element 16 of Fig. 1. Segment element 16 segments the data according its type. Segment element 16 extracts the video data.)

-- means for, responsive to the presence of one or more image data items, examining the one or more image data items for the presence of one or more repeated visual data elements; (column 3, line 56 to column 4, line 26; element 50 of Fig. 2)

-- means for, responsive to the presence of one or more repeated visual data elements, recoding the datastream with one or more replacement markers inserted to replace the one or more repeated visual data elements and with a decoding table for translating the one or more replacement markers during decoding. (column 3, line 56 to column 4, line 26; column 4, lines 47-67)

For Claims 10 and 15, Mead teaches an apparatus for decoding a packaged image, comprising:

-- means for determining whether a packaged image is present in a datastream; (Figs. 1 and 3; column 5, lines 28-41)

-- means for, responsive to determining that a packaged image is present in a datastream, extracting the packaged image; (Figs. 1 and 3; column 5, lines 28-41)

-- means for separating the packaged image into an image data structure and a decoding table containing one or more references and one or more corresponding identifiers; (Figs. 1 and 3; column 5, lines 28-58)

-- means for modifying the image data structure to replace any identifiers present in the image data structure with corresponding references; (Figs. 1 and 3; column 5, lines 28-58; Objects are generated based on the transmitted symbolic codes.)

-- wherein the modifying means further comprises means for replacing identifiers with references from a preloaded decoding table. (Figs. 1 and 3; column 5, lines 28-58; Objects are generated based on the transmitted symbolic codes. The generation is based on the library 84.)

The above-cited passages of Mead also teach the corresponding methods of Claims 1-2, 4, and 6-8.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead (US patent 6,683,993) as applied to Claims 1 and 9, and further in view of Mehrotra et al. (US patent 6,571,016 cited previously.)

Mead teaches the parent Claims 1 and 9.

However, Mead does not teach the feature related to the recited effective size.

Mehrotra teaches an apparatus for coding images with codebook (library), comprising:

-- a dividing means comprises means for analyzing an image to determine the most effective size of a subregion. (Fig. 12a; column 19, lines 8-17; The analyzing means is step 1212 of Fig. 12a for optimizing the combination of quality and compression efficiency.)

It is desirable to optimize the combination of quality and compression efficiency in image compression. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Mehrotra's teaching to decide the most effective size for each subregion of Mead's image for compression, because the combination improves combination of quality and compression efficiency.

9. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead (US patent 6,683,993) as applied to Claims 4 and 12, and further in view of Frazier et al. (US patent 5,689,255 cited previously.)

Mead teaches the parent Claims 4 and 12.

However, Mead does not teach the feature related to the recited statistics and removing references.

Frazier teaches an apparatus for coding images with codebook (library), comprising:

-- means for maintaining descriptive statistics on the frequency with which references stored in the symbol dictionary are employed and selectively removing the references when the frequency of their occurrence falls. (column 7, lines 45-63)

It is desirable to optimize image compression with a finite size code table (code book) by removing references that fail to occur recently to make room for new entry. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Frazier's teaching to removing stored references that fail to appear recently to make room for newly unrecognized objects and their corresponding symbolic codes of Mead's system, because the combination improves image compression with a finite size code table.

10. Claims 17-18, 20, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead (US patent 6,683,993) as applied to Claims 1-2, 4, 6-8, and further in view of Pearlman et al. (US patent 5,764,807 cited previously.)

Mead, as discussed above, teaches the corresponding method claims 1, 4, 6, 2, 7-8 of program-product of Claims 17, 20, 22, 18, and 23-24, respectively . However, Mead does not explicitly teach a computer program product as recited in the claims.

Pearlman teaches a computer program product comprising a computer readable medium carrying a computer program. (Column 2, lines 47-53)

It is desirable to make a processing method portable from a computer to another computer. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to store the processing steps of the method taught by Mead in a computer readable medium taught by Pearlman, because the combination makes the processing method portable and therefore increase its application.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mead and Mehrotra as applied to Claim 3, and further in view of Pearlman et al. (US patent 5,764,807.)

The combination of Mead and Mehrotra, as discussed above, teaches the corresponding method claim 3 of program-product of Claim 19. However, the combination does not explicitly teach a computer program product as recited in the claims.

Pearlman teaches a computer program product comprising a computer readable medium carrying a computer program. (Column 2, lines 47-53)

It is desirable to make a processing method portable from a computer to another computer. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to store the processing steps of the method taught by the combination of Mead and Mehrotra in a computer readable medium taught by Pearlman, because the combination makes the processing method portable and therefore increase its application.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mead and Frazier as applied to Claim 5, and further in view of Pearlman et al. (US patent 5,764,807.)

The combination of Mead and Frazier, as discussed above, teaches the corresponding method claim 5 of program-product of Claim 21. However, the combination does not explicitly teach a computer program product as recited in the claims.

Pearlman teaches a computer program product comprising a computer readable medium carrying a computer program. (Column 2, lines 47-53)

It is desirable to make a processing method portable from a computer to another computer. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to store the processing steps of the method taught by the combination of Mead and Frazier in a computer readable medium taught by Pearlman, because the combination makes the processing method portable and therefore increase its application.

(10) Response to Argument

1. To facilitate the understanding the relevance of Mead reference with regard to the claims, a brief description of Mead's method is given below in reference to the recited features of Claim 1.

Mead teaches a method performed in a compression system which reduces the number of bits needed to transmit an information signal. (Mead: column 1, lines 38-51) The method is for reducing data stream transmission bandwidth requirements. (recited in Claim 1 of the present application) As shown in FIG. 1 of Mead, a communication system combines a transmitter having an encoder 12 and a receiver including a decoder 19 (which is mislabeled in the text as 14.) The encoder portion recognizes objects within data signal and then classifies the objects with symbolic identifiers. The transmission system of the present invention includes an encoder and decoder that contain corresponding stored digital libraries. The transmitter only has to send a symbolic representation of the desired object to the transmitter. As a result, Mead significantly reduces the bit rate needed to transmit and significantly reduces the bandwidth of the transmission signal needed to communicate the content.

As shown in Fig. 1, audio and video data are inputted to segment element 16 of Fig. 1. Segment element 16 segments the data according its type. The segmenting process inherently has a determining step to tell whether a signal is an audio signal or a video signal. In response to determining that an image data structure is present in a data stream, segment element 16 extracts the image data (video data) structure from said data stream. (Mead; column 2, line 66 to column 3, line 23) After the video data are separated from audio data, it is fed into mapper 42 of Fig. 2, the inputted image data structure are then divided into one or more subregions corresponding to objects by segmenter 46. (Mead; column 3, lines 42-55)

The feature extractor 48 describes the at least one object based upon at least one feature quantity. In general, the feature extractor 48 reduces the representation of an object to a smaller number of components having sufficient information for discrimination between objects. Based upon the at least one feature quantity, each extracted object is compared by a classifier 50 to a set of generic objects, located in a generic library 52, for object recognition. The generic library 52, which is embodied by an electronic storage device, contains a corresponding representation for each of the generic objects. As an example, for an extracted object comprising a human head, the feature extractor 48 can extract features based upon shape and color for use by the classifier 50 in comparing to known human heads in the generic library 52. The classifier 50 then produces the symbolic code corresponding to the closest recognized object in the generic library 52 based upon the at least one feature quantity. (Mead; column 3, line 56 to column 4, line 15)

In general, the object encoder 22 provides the symbolic code for each recognized object to a multiplexer 54. However, it can be cases that an extracted object may not be recognized by any of the generic objects in the generic library 52. In this case, **the classifier 50 can add any unrecognized objects to the generic library 52 to be used as references for future similar objects. The unrecognized objects are provided to the multiplexer 54 for transmission to a corresponding decoder.** (Mead; column 4, lines 16-26)

Let us use an example to explain how the above passages teach the remaining limitations set forth in Claim 1. Take an input image having two identical red squares, appearing at different locations of the image, wherein the red square is not a generic object stored in library. The segmenter 46 shall extract an area corresponding to each red square. Feature extractor 46 then derives at least one feature quantity, which can be the dimension of the square and the color.

After comparing the feature quantity of the first red square against those stored in **generic library 52**, the first red square is not recognized by any of the generic objects in the generic library 52. In this case, **the classifier 50 can add the red square to the generic library 52 with a new identifier to be used as references for future similar objects.** (teaching the feature of "associating a corresponding identifier with a first selected one of said one or more subregions" recited in Claim 1 of the present application) When the second red square is compared, it now is recognized by the red square, corresponding the first red square, stored in the generic library 52. The classifier 50 then produces the symbolic code corresponding to the red square in the generic library 52. The symbolic code representing the identifier for the red square is by the object encoder 22. (teaching the features of "in response to determining that said first selected one of said one or more subregions is substantially identical to a second selected one of said one or more subregions" and "replacing second selected one of said one or more subregions with said corresponding identifier of said first selected one of said one or more subregions" recited in Claim 1 of the present application) The pair of (red square, identifier of red square) forms a decoding table. Formation of the decoding table will be more clear when an image contains three pairs of objects, red line, square, and circle new to the library. The three pairs of (new object, new identifier) form a decoding table to be delivered to the decoder for updating the library in the decoding side (Mead; column 5, lines 42-58.) The information of the objects and the corresponding identifiers **are provided to the multiplexer 54 for inserting into packaged image data for transmission to a corresponding decoder.** (Mead; column 4, lines 16-26; It teaches the steps of generating, inserting, and transmitting the packaged image.) The

2. Issues for appeal

a. Applicants' argument (in Pages 7-11 of the Appeal Brief) -- Mead does not teach the feature (1) recited in the amended Claim 1 "generating a packaged image, which includes a decoding table comprising said first selected one of said one or more subregions and said corresponding identifier of said first selected one of said one or more subregions in place of said second selected one of said one or more subregions" containing one or more references and one or more corresponding identifiers."

Examiner's response -- Mead has to be considered as whole. The portions cited by the Examiner are only for helping the Appellants to understand the rejections. The Examiner cited portions of Mead (Figs. 1-2; column 3, line 56 to column 4, line 26; column 4, lines 47-67) also teaches feature referred above. Mead compares an object that is part of an image with objects stored in the library 52. If there is a match, an existing identifier from library is used to code the object. If not, the unrecognized object with its corresponding identifier is stored in the library for future matching (column 4, lines 18-26.) The passage in column 4, lines 18-26 points out more than one unrecognized object with its corresponding identifier can be stored in the library in the coder side. Also the unrecognized object with its corresponding identifier are transmitted to the decoder (column 4, lines 54-55.) The passages in column 5, lines 53-58 further teaches that the generic object library 84 is updated upon receiving new objects which were unrecognized in the segment encoder. It is inherently that library entry (or entries) forms a decoding table that gives the corresponding information of a symbolic code. Evidently, the table is transmitted from the coder to the decoder during an on-line coding process.

Let us use an example to explain how Mead teaches the amended Claim 1. One just starts the system taught in Figs. 1-2, there are some recognized objects stored in generic library 52. When a new image is received for coding, its image data structure is divided into one or more segments (sub-regions.) Each sub-region is compared with the information in the library 52 in turn. When there is a match, a symbolic code is assigned to the sub-region. When a first non-recognized sub-region (interpreted as the first selected one of said one or more sub-regions recited in Claim 1 of this Application) is found after comparing with the information in the library 52, the first non-recognized sub-region is added to the library 52 to be used as a new reference for future similar object. As an entry to the library 52, it is inherently assigned an identifier. The information of both the first non-recognized sub-region and its corresponding identifier are placed in the data stream to be transmitted to the decoder. During the object comparison, a subsequent sub-region (interpreted as the second selected one of said one or more sub-regions recited in Claim 1 of this Application) is compared with all objects in library 52, that now includes both the new reference and all old references. In response to determining that the subsequent sub-region is substantially identical to the new reference (the first non-recognized sub-region), the subsequent sub-region is replaced with the corresponding identifier of the new reference. The corresponding identifier of the new reference is added into data stream to be sent to the decoder as the information of the subsequent sub-region.

b. Applicants' argument (in Pages 7-11 of the Appeal Brief) -- Mead does not teach (2) the feature recited in the original Claim 2 "separating the packaged image into an image data structure and a decoding table containing one or more references and one or more corresponding identifiers."

Examiner's response -- The Examiner disagrees with the conclusion. The Examiner cited portions of Mead (Figs. 1 and 3; column 5, lines 28-58) teach feature (2) referred above. The code of the unrecognized signal is the identifier that is transmitted to the decoder side. As explained previously, the data of unrecognized objects and their symbolic codes form a decoding table. The argument with regard to feature (1) above is also applied here. For unrecognized objects, both images of the objects and their corresponding identification codes have to be provided to the decoder. Otherwise, the decoder cannot decode the data stream. The one-to-one correspondence between the information of images of the objects and their corresponding identification codes forms a decoding table to be added to the generic object library 84.

c. Applicants' argument (in Pages 11-13 of the Appeal Brief) -- With regard to rejections to Claims 3 and 11 under U.S.C. 103(a) based on Mead in view of Mehrotra, no motivation or suggestion for combination is found in the cited reference. The Examiner failed to establish a *prima facie* case of obviousness.

Examiner's response -- The Examiner disagrees with the conclusion. As the Applicant correctly cited in this Appeal Brief, motivation or suggestion for combination can also be relied on the knowledge generally available to one of ordinary skill in the art. Actually, obvious advantage of combination was based on the knowledge.

First, with regard to the issue related to "establishing a *prima facie* case of obviousness," the Examiner pointed out previously that the motivation or suggestion for combination can also be relied on the knowledge generally available to one of ordinary skill in the art. The Appellant just ignored to respond to the Examiner's argument.

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Furthermore, Mead explicitly stated that for video compression, one objective is to reduce the number of bits needed to represent the video signal while preserving its information content. (column 1, lines 26-28) The degree of reducing the number of bits needed to represent the video signal is a measure of compression efficiency. Preserving information content of an image leads to no loss of image information. Loss of information results a reconstructed image poorly reproducing the original image. How truthful a compressed image can be reconstruction is a measure of quality of a decoded image. Therefore, Mead provides clearly the motivation of optimizing the combination of quality and compression efficiency in image compression.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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 7/21/06

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